

REMARKS

Claims 10, 11 and 18 have been amended. Thus, Claims 10-18 are pending in the present application.

Claim Rejections under 35 USC §112:

The Examiner rejected claims 10-18 for failing to comply with the written description requirement and for being indefinite. Applicant respectfully disagrees. The present application refers to a simulation program for easy determination of certain influences within a numerical control process on the actually manufactured workpiece. Numerical controlled manufacturing processes are very well known in the art. However, to determine what causes certain deviations in a workpiece manufactured by such a process can be time consuming and rather difficult procedure. The present invention allows for selectively analyzing certain steps within such a process.

The specification discloses on page 5, line 10, that the initial data record describes a workpiece by idealized processing instructions. However, in other numerical controlled machines other methods for describing the workpiece might be used. The specification further describes that such an initial data record must be "translated," for example, into certain movements which have to be executed by the machine to actually manufacture the desired workpiece. In particular, certain speeds, acceleration, and steps have to be determined for proper operation. Depending on the respective process, a single or a plurality of such transformations might be necessary. The present invention is not related to these actual steps in a numerical controlled system because a person skilled in the art will understand that a wide variety of possible transformations exists depending on the respective process. However, each single transformation will generate a resulting deviation. In particular the machine itself will have certain characteristics which depend on further influences such as the quality of the control by a control unit, the actual response of the processing machine, and the properties of the drive of such a processing machine.

According to the present invention, display data can be generated from each step in the above described process. This data is used to generate a two-dimensional projection of the

resulting workpiece to show what kind of deviations are generated. The term two dimensional projection is used because the three-dimensional workpiece will be displayed on a normal display screen of a computer. Being able to analyze these data for selected steps of the manufacturing process allows for identifying the causes of undesired deviations in a relatively easy way. A person skilled in the art will have no trouble in understanding this concept from the specification of the present application.

Applicant amended the claims accordingly to more clearly point out this concept. No new matter has been added. The above reasoning is fully supported by the specification, on particular, on page 7, line 8 – page 8, line 13 and in the following paragraphs describing figure 3 of the drawings.

Claim rejection under 35 USC §103:

Claims 10-18 have been rejected under 35 U.S.C. 103(a), as being unpatentable over Matsumoto (US 5,291,393) in view of ordinary skill in the art.

The subject matter of the various claims was commonly owned at the time of the invention because all inventors were regular employees of the Applicant at that time of the invention and obligated to assign any patent application to the Applicant.

The Examiner stated that Matsumoto discloses an NC machine tool with all the basic limitations of independent claim 1.

As stated above, Applicant amended independent claim 1 to more clearly disclose the concept of the present invention. According to the present invention at least one transformation of a data record and certain parameters of the numerical controlled machine will have an impact on deviations of the final workpiece. A user can select a certain point within this process. The simulation program will then determine the actual influence of this step on the workpiece and generate a visualization in form of a two-dimensional projection of the three-dimensional workpiece. Matsumoto does neither disclose nor suggest such a process. Matsumoto only discloses to simulate the programmed numerical process to display a resulting workpiece. This is often desirable to see whether the movements of the numerical controlled machine will interfere with other movements and cause undesired results. However, Matsumoto

does not indicate that the simulation includes the calculation of deviations caused by the process itself or by characteristics of the numerical controlled machine. In particular, Matsumoto is completely silent with respect to the selection of a data record within the processing chain of the control apparatus.

The dependent claims 11-18 include all the limitations of independent claim 10 and is, therefore, patentable at least to the extent of independent claim 10. However, these claims include further limitations which are neither shown nor suggested by the prior art. These claims further limit the simulation process to certain aspects with respect to selecting data records and including machine parameters which are neither disclosed or suggested by the prior art.

Therefore, Applicant respectfully requests allowance of the present set of claims.

CONCLUSION

The application as defined in the pending claims is patentable under 35 U.S.C. §112 and §103 in view of the cited prior art. Therefore, applicants respectfully request withdrawal of the rejection and allowance of all pending claims.

Applicants do not believe that any other fees are due at this time; however, should any fees under 37 C.F.R. §§ 1.16 to 1.21 be required for any reason relating to this document, the Commissioner is authorized to deduct the fees from Deposit Account No. 02-0383, (*formerly Baker & Botts, L.L.P.*) Order Number 071308.0102.

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Respectfully submitted,

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